

1. Pre-visit Classroom-based Activity 參觀前課堂活動

PRIMARY STUDENTS 小學

Your class will soon be visiting the Hong Kong Maritime Museum where you will learn lots of new things about the science of navigation, ships and the sea. This is a special lesson to prepare for your visit to the museum.

你們這一班即將參觀香港海事博物館，在那裡你們會學習到許多有關導航的科學，船隻和海洋的新事物。這是一個特別的課堂，為這次參觀博物館作好準備。

1

How do we know where we are in the world?

我們怎樣知道我們在地球的哪裡？

In this lesson, we are going to learn about *navigation*. Navigation means finding out exactly where you are and then following a route to get to another place. Let's begin with a few quiz questions about navigation.

在這個課堂中，我們將會學習有關導航的知識。導航的意思是尋找出你準確的位置，然後跟隨指定的路線去到另一個地方。讓我們從一些有關導航的問答題開始。



1. How do we know where we are in the world? 我們怎麼知道我們在地球的哪裡？

2. What if someone leaves us in the middle of a strange city, how would we know our position?

假如有人把我們留在一個陌生的城市中，我們怎麼知道我們的位置？

3. What if we are in the middle of the ocean? We have no technology to help us and all around us is water. How can we navigate our way home?

假如我們是在大海中央呢？我們沒有科技來幫助我們，周圍都是水，我們怎樣才能導航回家？

2

Navigating with stars 星星導航

In the past, sailors used to navigate by looking at the stars. By recognising the patterns in the stars, they could navigate at sea. But, there was one big problem - almost all stars move throughout the night! 在過去，水手使用仰望星空來導航。通過天上星星的圖案，他們可以在海上航行。但是，有一個大問題 - 幾乎所有星星在晚上都會移動！

1. How can smart sailors navigate if most of the stars are moving?

如果大多數的星星都會移動，聰明的水手如何導航？

2. Why is the *North Star* (Pole Star) so important to sailors and people on land?

為什麼北極星（極星）對水手和陸地上的人們這樣重要？



If you do not have a map, compass or GPS, you can use the stars to find your way, just like the sailors did in the old days. But!!! you must be able to find the North star in the night sky! 如果你沒有地圖，指南針或全球定位系統，你可以使用星星找到自己的方向，就像以往的水手們。但是！！你一定要在夜空中找到北極星！



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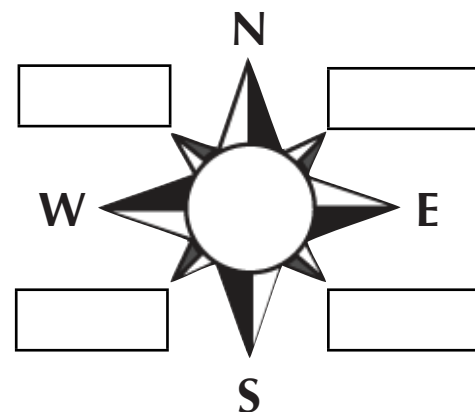
3 Reading compass directions 閱讀指南針方向

The four directions on a compass are the directions of **North**, **East**, **South** and **West**, commonly denoted by their initials: **N**, **E**, **S**, **W**. These directions are called the cardinal directions.

指南針的四個方向為北，東，南，西，它們的縮寫常用N，E，S，W來表示。這些方向稱為基本方位。

Look at the compass diagram. Write down the four intermediate points between the four cardinal directions.

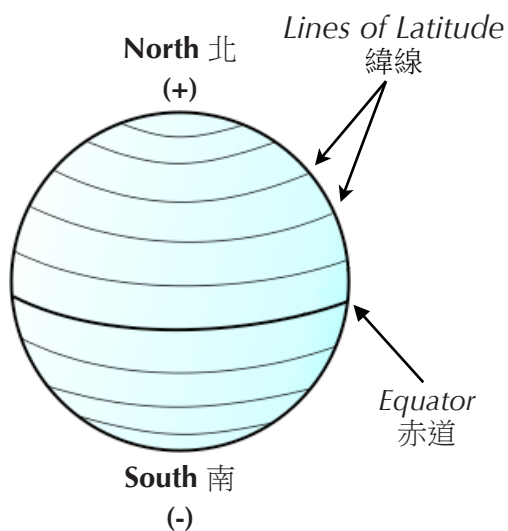
看看指南針圖。寫下四個基本方位的四個中間點。



4 Navigating around the earth 環繞地球航行

To find out where we are in the world, and to make it easier for people to navigate, we use imaginary lines around the earth to help us. These are called lines of *Longitude* and *Latitude*.

要知道我們在地球所處的位置，並使我們更加容易導航，我們使用虛線環繞地球來幫助我們。這些虛線被稱為經度線和緯度線。



Lines of Latitude 緯度線

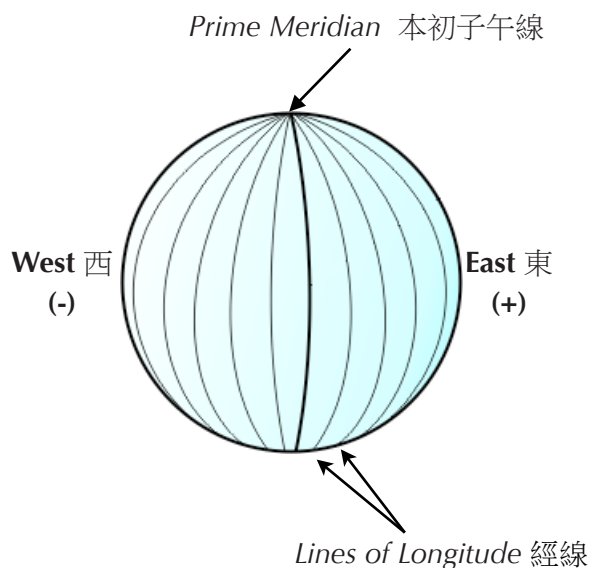
Latitude tells us how far **North** ↑ or **South** ↓ we are in the world. Latitude lines are horizontal rings that go around the earth. The lines are 'parallel', which means they do not touch each other.

緯度告訴我們離開北面或南面有多遠。緯度線呈水平狀環繞地球走。它們是'平衡'線，即是它們並不會有交叉點。

Lines of Longitude 經度線

Longitude tells us how far **East** □ or **West** □ we are in the world. On a globe, the longitude lines are vertical lines.

經度告訴我們離開東面或西面有多遠。在地球儀上，經度線是垂直的線。



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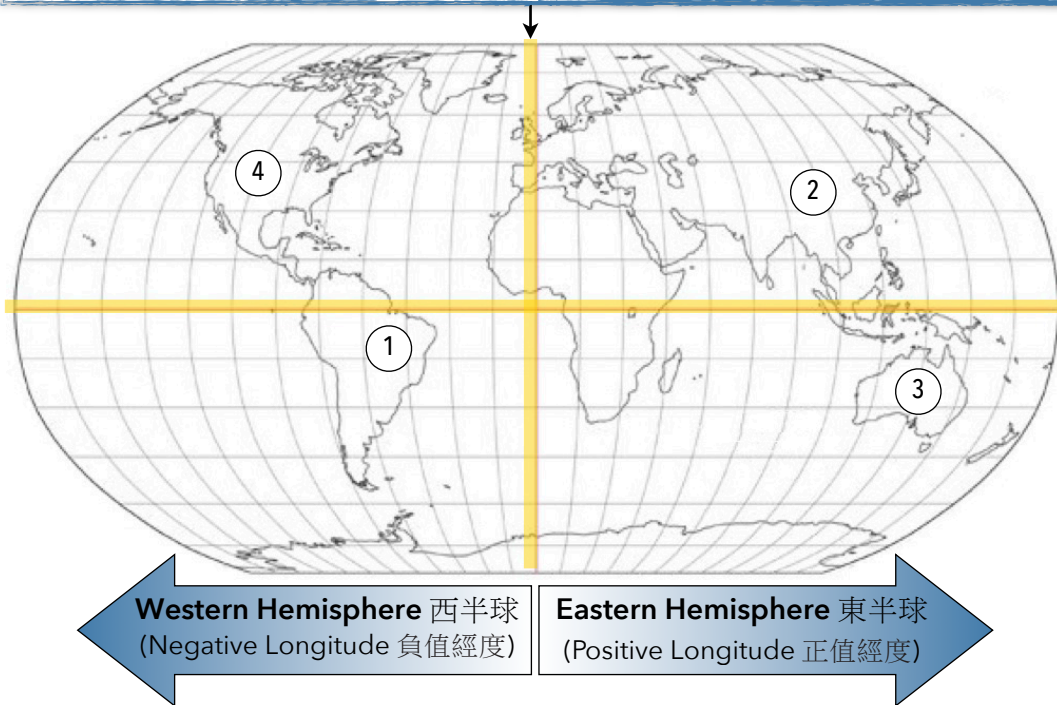
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Putting Latitude and Longitude together 經度與緯度放在一起

When we put latitude and longitude lines together, we make a grid of the earth. This helps sailors to know exactly where they are on earth.

當我們把經線和緯線放在一起，我們製造了一個格子網絡。這有助於水手們確認他們在地球上的位置。

The **Prime Meridian** passes through Greenwich, England and part of Africa.
本初子午線穿過英國的格林威治及非洲的某些地方。



6

Countries and Hemispheres 國家和半球

Look at the 4 country flags below. Write the name of each country below the flag, then decide if the country is in the *Western* or *Eastern* hemisphere.

看看下面四個國家的國旗。寫下每個國家的名字，然後決定他們是否在東半球或西半球。

①



②



③



④



2. On-site Visit Activity 現場參觀活動

PRIMARY STUDENTS 小學

DECK A

Making and Using a Compass 製作和使用指南針

When sailors are at sea, it is important for them to find their location and direction. They use a compass to help them navigate from one place to another.

當水手們身處海上，他們的位置和方向是很重要的。他們利用指南針來幫助他們從一個地方導航到另一個地方。

Quick Compass Questions 指南針小問題

If you are out in the open sea and you do not know where you are, you can find your way using a compass.

假如你是在大海上而你又不知道你在何處，你可以使用指南針找到自己的方向。

1. What does a compass do? 指南針有甚麼用？

2. How does a compass work? 指南針是怎樣操作的？

3. How would this help us if we are lost at sea? 如果我們在海上迷失了，這將會如何幫助到我們？

Bar Magnet 磁棒

Look at the bar magnets. It has a North and South pole, just like earth. If you tie the magnet to a suspended string, it will point to the North and South!

看看這磁棒，它就像地球一樣，有一個南極一個北極。如果你把鐵棒綁上懸掛在半空，它會指向北方和南方！

Compass Making Challenge 指南針製作

Imagine the Deck A is the sea, and we are lost in the middle of it. The only way we can get out is by making our own compass.

想像展廳A是大海，我們在海中迷路了。我們唯一可以找到出路的方法便是自己製造一個指南針。

Your job is to make a compass and find out where the *North, South, East, and West* directions are on Deck A. You **must find 1 museum item** that is in each direction and mark it on the map.

你的任務是製造一個指南針和找出甲板A的北，南，東，西方向。你必須在博物館的每一個方向找到一件物件並記錄在地圖上。

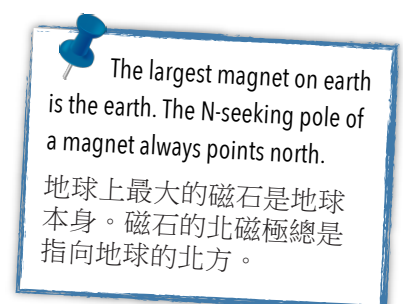
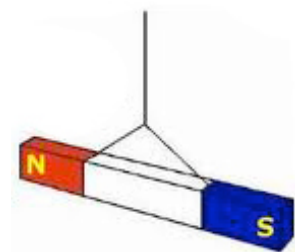
We are going to work in groups of 5. Each group, will have the following roles;

我們將分成五人一組，每個小組有五個角色；

- Compass maker 指南針製作員
- Compass holder / reader * 指南針操作員 / 閱讀員
- Travel recorder 記錄員
- Captain (leader) 隊長
- Map maker 地圖製作員

* can combine compass holder and reader if not enough students

如果沒有足夠的學生，指南針操作員及閱讀員可以是同一人



HKMM WORKSHEET

香港海事博物館 活動工作紙

KM Koo Ship Bridge Simulator and A Deck
顧國敏船舶模擬駕室及展廳A

2. On-site Visit Activity 現場參觀活動

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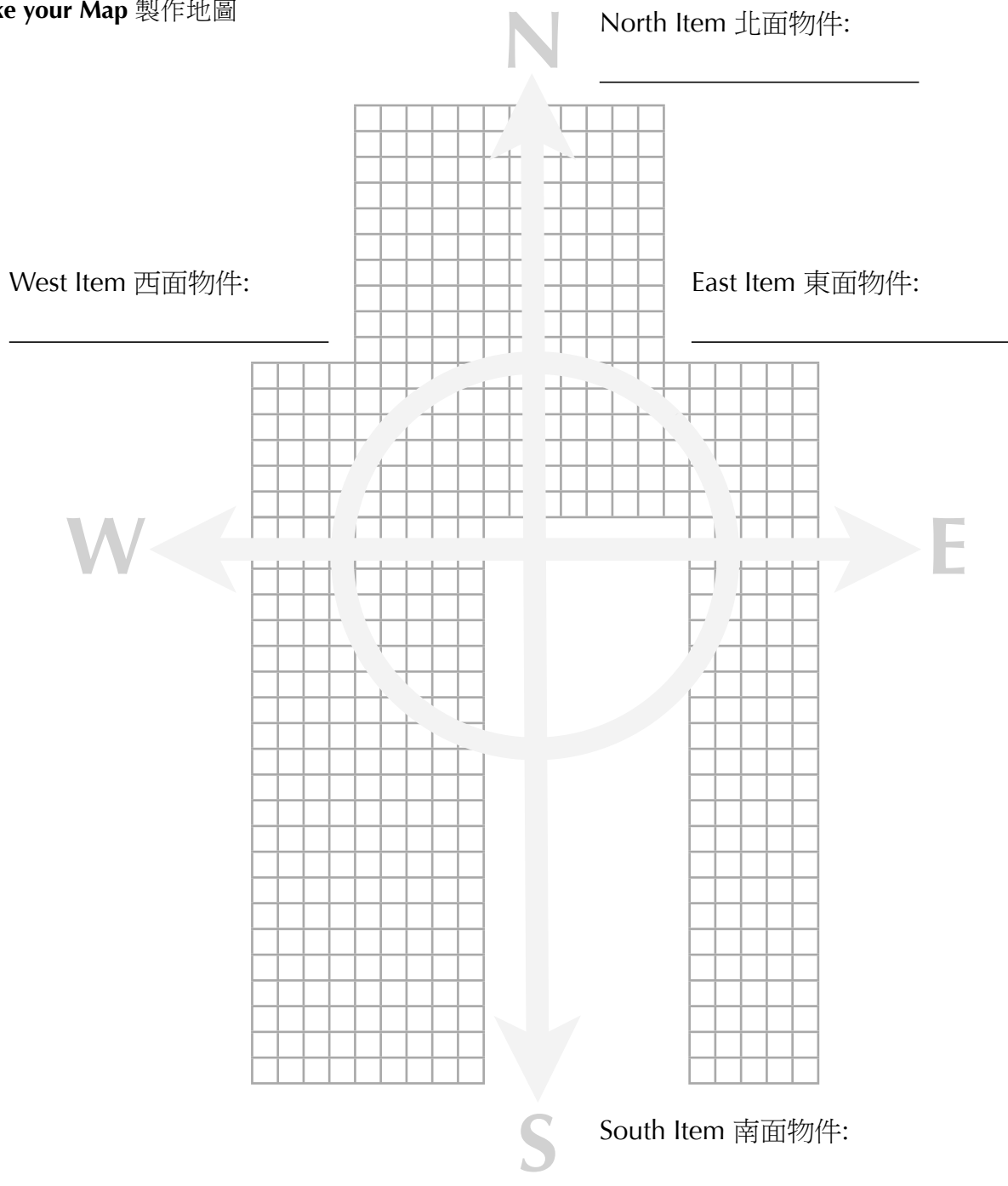
DECK A

Make a Compass 製作指南針

Use the items in your Tool Box to make your compass. Follow your teacher's instructions carefully! When you have made your compass, you will have 10 minutes to make your map.

使用工具箱裡面的物件製作你的指南針。小心按照老師的指示！當你完成你的指南針之後，你有十分鐘時間製造你的地圖。

Make your Map 製作地圖



2. On-site Visit Activity 現場參觀活動

PRIMARY STUDENTS 小學

BRIDGE SIMULATOR

Interview with the Captain 船長專訪

You are now going to visit the bridge simulator. When you go inside, it will feel like you are standing on the bridge of a real ship! The Captain will demonstrate how to navigate the ship.

你即將參觀船舶模擬駕室,當你進入後,你會感到彷彿置身於真實船隻的駕駛室中!船長會示範如何導航船隻。

Interview the Captain to find out as much as you can about navigation. Write the name of the ship's instruments on the diagram below as you listen to the Captain's explanations.

採訪船長,盡可能了解有關導航的知識。在聽取船長解釋的同時,於下圖寫出船上儀器的名稱。

Here are some questions you can ask the Captain;

以下是一些你可能想訪問船長的問題:

- Where is the ship's compass? Which direction is the ship moving in now?
船上的指南針放在哪裡?現在船隻正朝著哪個方向行駛?
- Where is the radar monitor? What does it do?
雷達顯示器放在哪裡?它有什麼作用?
- Which instrument shows us the *Latitude* and *Longitude* of the ship?
哪個儀器向我們展示了船隻的緯度和經度?
- What kind of information can we see in the electronic chart display?
我們可以在航海圖上得到甚麼資訊?
- What happens when it's foggy and you cannot see outside?
在大霧天看不見外面的時候,會發生甚麼情況?
- How far is a nautical mile?
一海哩有多遠?



3. Post-visit Classroom-based Activity 參觀後課堂活動

PRIMARY STUDENTS 小學

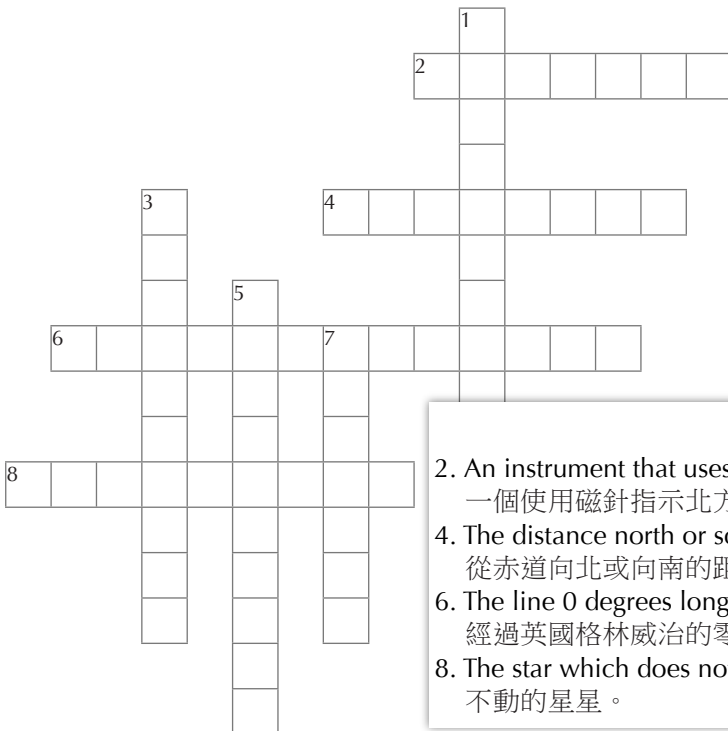
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Navigation Crossword 導航填字遊戲

Can you remember the meanings of all the new words you have learnt?
Complete the crossword by writing the correct word in each space.

你還記得新學到的航海詞語嗎？（用英文）完成下面的填字遊戲。

Use your notes from previous lessons to help you finish the crossword!
利用你之前的筆記，來幫助你完成這個填字遊戲！



Down 直

1. Distance east or west from the Prime Meridian.
從本初子午線向東或向西的距離。
3. Following a planned course, from one place to another.
按照計劃路線，從一個地方到另一個地方。
5. Half of the world.
地球的一半。
7. The line 0 degrees latitude.
零緯度。

Across 橫

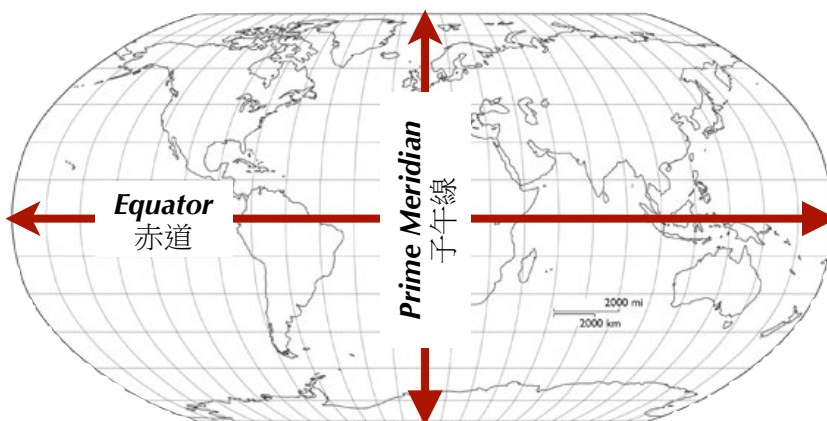
2. An instrument that uses a magnetized needle to indicate the direction North.
一個使用磁針指示北方的儀器。
4. The distance north or south of the equator.
從赤道向北或向南的距離。
6. The line 0 degrees longitude that runs through Greenwich, England.
經過英國格林威治的零經線。
8. The star which does not move.
不動的星星。

2

How do we measure Longitude? 我們如何量度經度？

Just like a circle, longitude lines have a total of 360°. The longitude map is divided into 24 sections; 12 for the West and 12 for the East. If a circle has 360°, how many degrees are there in each section?

就像一個圓圈，經度線總共有360度。經度地圖分為24段；12段在西面，12段在東面。如果一個圓圈有360度，那麼每一段有多少度？



Remember that western degrees are always *negative*, and eastern degrees are always *positive*. For example, Hong Kong, is at +114° East.
記住，西面的度數是負值，東面的度數則是正值。例如香港是東經正114度。

3. Post-visit Classroom-based Activity 參觀後課堂活動

PRIMARY STUDENTS 小學

3

My World Map 我的世界地圖

Let's make our own world map which includes as many details as possible. See how many of the following instructions you can follow to complete your own world map!

讓我們來製造自己的世界地圖，並盡可能包括最多的細節。看看你能夠按照下面多少項說明，完成自己的世界地圖！



1. Mark the prime meridian and equator on your map in yellow.
在地圖上用黃線標記出本初子午線與赤道。
2. Draw blue arrows to show where the Western and Eastern hemispheres are on the map.
在地圖上用藍色箭頭顯示東半球及西半球。
3. Use a pencil to draw 6 lines of latitude from the equator to the top of the map. Draw another 6 lines from the equator to the bottom of the map. The lines should be spaced out equally.
用鉛筆在赤道以上畫六條緯度線。並在赤道以下畫另外六條緯度線。線與線的距離應該是相等的。
4. Label the 12 lines of latitude with the correct numbers; 15°, 30°, 45°, 60°, 75°, 90°. Remember, the equator must be 0°.
標籤12條緯線正確的度數：15°，30°，45°，60°，75°，90°。請記住，赤道必須是0°。
5. Use a pencil to draw 6 lines of longitude from the prime meridian to the west of the map. Draw another 6 lines from the prime meridian to the east of the map. The lines should be spaced out equally.
用鉛筆在本初子午線以西畫六條經線。並在以東畫另外六條經線。線與線的距離應該是相等的。
6. Label the 12 lines of longitude with the correct numbers; 30°, 60°, 90°, 120°, 150°, 180°.
標籤12條經線正確的度數：30°，60°，90°，120°，150°，180°。
7. Well done! Your map is nearly finished. Now, find Hong Kong on the map and draw a red circle.
非常好！你的地圖接近尾聲了。現在，在地圖上找出香港並在上面畫一個紅圈。
8. To finish, mark the latitude and longitude of Hong Kong on the map : 22°N 114°E.
最後，在地圖上標記香港的的經緯度：22°N 114°E。

